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***Lophodermium quadrisporum* sp. nov.**
(*Rhytismataceae*) on *Rhododendron faberi* subsp. *prattii*

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ABSTRACT — *Lophodermium quadrisporum*, a new fungus found on fallen leaves of *Rhododendron faberi* subsp. *prattii* from Sichuan Province, China, is described, illustrated, and discussed. This taxon is distinguished from its closest relatives by the occurrence of both 4- and 8-spored asci. The type specimen is deposited in the Reference Collection of Forest Fungi of Anhui Agricultural University, China (AAUF).

KEY WORDS — foliicolous fungus, morphological character, taxonomy

Introduction

Lophodermium Chevall. is the largest genus of *Rhytismataceae* (*Rhytismatales*, *Leotiomycetes*, *Ascomycota*; Kirk et al. 2008) and is distributed worldwide (Cannon & Minter 1986, Lin et al. 2012). IndexFungorum (2014) lists 342 epithets for the genus, among which SpeciesFungorum (2014) accepts 172 *Lophodermium* species.

Here, a fungus on an ericaceous plant from Sichuan Province is described and designated as a new species of *Lophodermium*.

Materials & methods

Material with mature ascomata was selected from the specimen eventually designated as the holotype and described macroscopically under the dissecting microscope at 10–50× magnification. After rehydration in water for ca 10 min, the fruitbodies were sliced into 8–20 µm thick sections with a freezing microtome (YD-202, China). Microscopic features were examined in water, 5% KOH, Melzer's reagent, cotton blue in water, or lactophenol-cotton blue. Sections were mounted in 0.7% (w/v) cotton blue in water to observe the outlines of ascomata in vertical section. Gelatinous sheaths surrounding

ascospores and paraphyses were observed in water or 0.1% (w/v) lactophenol-cotton blue. The color of internal structures and ascospore contents were determined in water. For each specimen, at least 30 asci, ascospores, and paraphyses were measured in 5% KOH solution. Line and point integrated illustrations of the fruitbody external shape and internal structures were prepared using the Panasoianic XSJ-2 microscope drawing device.

Taxonomy

Lophodermium quadrisporum D.D. Lu & Y.R. Lin, *sp. nov.*

FIGS 1–5

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Differs from *Lophodermium rufum* by its elliptical to lunate ascomata, grey lips, branched and swollen or circinate paraphyses, and 4- and 8-spored asci.

TYPE: China, Sichuan, Ya'an, alt. ca 3550 m, on fallen leaves of *Rhododendron faberi* subsp. *prattii* (Franch.) D.F. Chamb, (*Ericaceae*), 21 June 2009, Y.G. Liu & Y.R. Lin 2765 (Holotype, AAUF 68873).

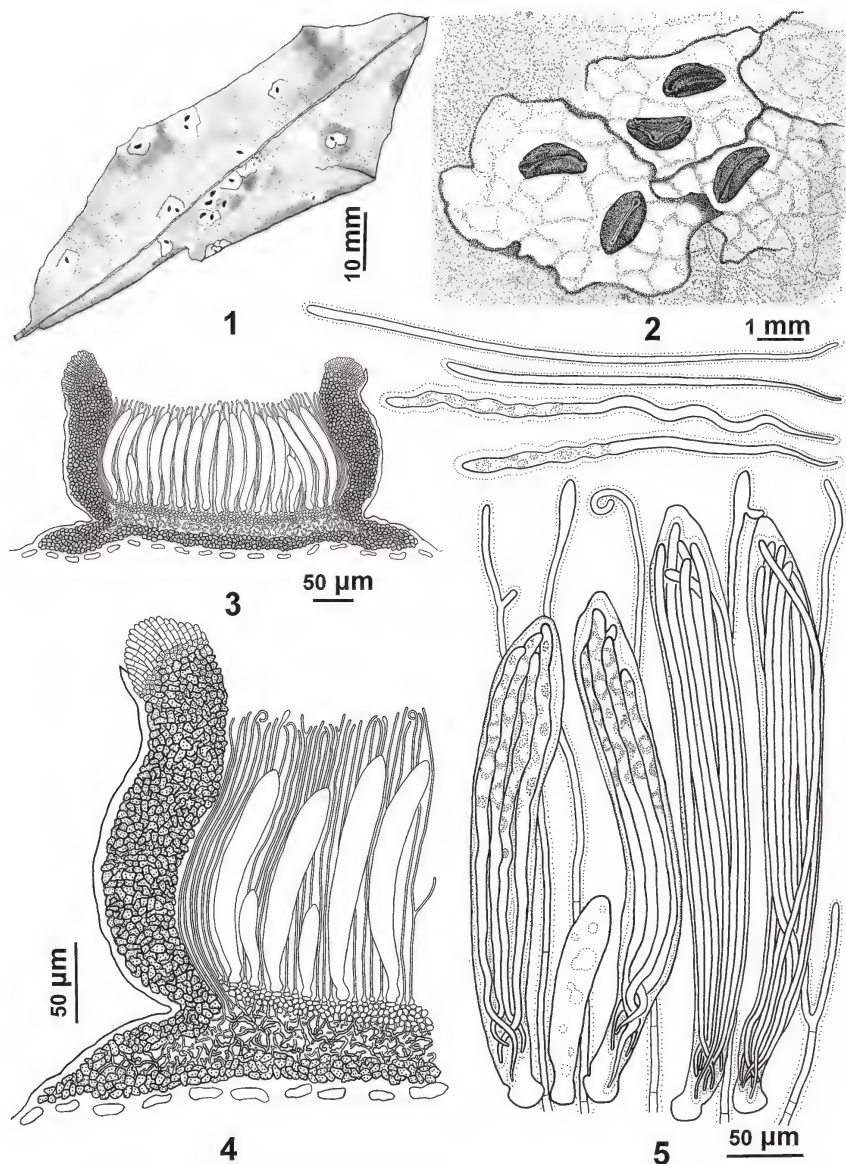
ETYMOLOGY: *quadrisporum* (Latin = 4-spored), referring to one of the two types of the asci, containing four ascospores.

COLONIES only epiphyllous, forming subround to irregular, yellow-white to grayish-yellow bleached areas 3–5 mm diam., which tend to coalesce into larger irregular shapes.

ZONE LINES frequent, dark brown to black, with various width, clearly defined or sometimes diffused, entirely or partly surrounding the paler areas.

CONIDIOMATA not observed.

ASCOMATA developing on the upper side of leaves, scattered in the bleached spots. In surface view, ascomata 680–1440 × 220–540 µm, elliptical or lunate, straight or curved to one side, black-brown to black, slightly shiny, ends rounded, obtuse or slightly acute, with a clearly marked outline, moderately rising the substratum surface, opening by a single longitudinal split nearly extend to the edge of the ascomata. Lips grey, sometimes valgus. In median vertical section, ascomata subcuticular. COVERING STROMA well developed, 45–60 µm thick near the opening, gradually thinner towards the edge, connecting to the basal stroma, mainly composed of textura angularis-epidermoidea with dark brown to black thick-walled cells 3–7 µm diam. Lip cells well developed, subhyaline, 4–7 × 2–3 µm, thin-walled, cylindrical, 0–4-septate, more or less radially arranged. BASAL STROMA black-brown, comprised of 2–4 layers of thick-walled, angular to aliform cells 3–6 µm diam. SUBHYMENIUM well developed, 18–25 µm thick, flat, consisting of colorless thin-walled textura angularis and intricata. PARAPHYSES exceeding height of asci by 20–30 µm, 1.5–1.8 µm wide, thin-walled, with septa which seem to only occur in the lower part of the paraphyses, filiform, often branched, sometimes circinate or gradually swollen to 3–4 µm above, covered with a ca 1 µm thick gelatinous matrix. Asci



FIGS 1–5. *Lophodermium quadrisporum* (Holotype, AAUF 68873) on *Rhododendron faberi* subsp. *prattii*. 1. Habit on a leaf. 2. Detail of ascomata and zone lines. 3. Ascoma in median vertical section. 4. Portion of ascoma in median vertical section. 5. Paraphyses, asci, and ascospores.

ripening sequentially, thin-walled, cylindrical-clavate, short-stalked, apex subacute or subtruncate-conical, without circumapical thickening, not bluing in iodine, discharging spores through a small apical hole, of two-types: ca 30% A-asci: 4-spored, $105\text{--}140 \times 12\text{--}19\ \mu\text{m}$; ca 70% B-asci: 8-spored, $110\text{--}160 \times 15\text{--}20\ \mu\text{m}$. 5–7-spored asci caused by spore abortion not observed. A-asci ascospores $95\text{--}125 \times 3\text{--}4.5\ \mu\text{m}$, wide-filiform, often curved into a snaky shape, tapered towards the acute base, containing bright oil drops and dull-colored granules in the nodular upper half, aseptate, covered by a $0.8\text{--}2\ \mu\text{m}$ thick gelatinous sheath. B-asci ascospores $100\text{--}145 \times 2\text{--}2.5\ \mu\text{m}$, filiform, slight tapered to the base, arranged in a fascicle, colorless, continuous, smooth-walled, covered with a gelatinous sheath ca $0.8\ \mu\text{m}$ thick.

HOST SPECIES, HABITAT AND DISTRIBUTION: Producing ascomata on fallen leaves of *Rhododendron faberi* subsp. *prattii*. Known only from the type locality, Ya'an, Sichuan Province, China.

COMMENTS — *Lophodermium quadrisporum* is very similar to *L. rufum* Y.R. Lin & K. Li on *Rhododendron maculiferum* subsp. *anhweiense* (E.H. Wilson) D.F. Chamb. in the way ascomata are embedded, dehiscence mechanism, and ascal shape. However, *L. rufum* produces elliptical ascomata, reddish-brown lips, heavily carbonized tissues in outer layer of the covering stroma, nearly colorless textura angularis between the covering and basal stroma, uniformly 8-spored asci, and unbranched paraphyses (Xu et al. 2001).

Lophodermium pachychilum Y.R. Lin & Z.S. Xu is distinguished from the new species by absent zone lines, wide-elliptical intra-epidermal ascomata dehiscing by an elongate-elliptical split, a covering stroma composed of textura angularis with pale thin-walled cells near the edge, a subhymenium consisting of textura porrecta, and paraphyses agglutinated to form an epithecium above the asci (Xu et al. 2001).

In addition, *Lophodermium quadrisporum* resembles *Lophomerum ponticum* Minter on *Rhododendron ponticum* L. morphologically, but *L. ponticum* has smaller ascomata (only $600\ \mu\text{m}$ long), much shorter and narrower asci ($65\text{--}105 \times 9\text{--}15\ \mu\text{m}$), shorter paraphyses just as long as or slightly longer than the asci, and shorter ascospores ($45\text{--}80\ \mu\text{m}$) aseptate or 1–3-septate (Minter 1980).

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